
Apex Specialist Super Badge

1. First create a new Trail head Playground.
2. Install a package How We Roll Maintenance(package ID: 04t6g000008av9iAAA)which contain metadata for the completion of super badge.
3. Add two picklist values Repair and Routine Maintenance to Type field on case Object
4. Update Case page layout assignment to Case(HowWeRoll)Layout for your profile.
5. Rename label for case object to Maintenance Request.
6. Update the Product page Layout assignment to Product(HowWeRol)Layout for profile.
7. Rename the lable of product object to Equipment.
8. Use App Launcher to navigate to the Create Default Data tab of the How We Roll Maintenance app. Click Create Data.
9. Apex classes and Triggers are used to complete this badge.
10. Triggers and classes can be created using the developer console in trailhead.
11. The code must be executed once to complete the challenge in the superbadge.

ApexSpecialist

Challenge-1:Automate record creation

- Go to Developer console
- Create an apex class as **MaintenanceRequestHelper**
- Copy the below code.

MaintenanceRequestHelper.apxc

```
public with sharing class MaintenanceRequestHelper {
   public static void updateworkOrders(List<Case> updWorkOrders, Map<Id,Case>
nonUpdCaseMap) {
      Set<Id> validIds = new Set<Id>();


      For (Case c : updWorkOrders){
         if (nonUpdCaseMap.get(c.Id).Status != 'Closed' && c.Status == 'Closed'){
            if (c.Type == 'Repair' || c.Type == 'Routine Maintenance'){
               validIds.add(c.Id);


            }
         }
```

```
    if (!validIds.isEmpty()){
      List<Case> newCases = new List<Case>();
      Map<Id,Case> closedCasesM = new Map<Id,Case>([SELECT Id, Vehicle__c,
Equipment__c, Equipment__r.Maintenance_Cycle__c,(SELECT Id,Equipment__c,Quantity__c
FROM Equipment_Maintenance_Items__r)
                                    FROM Case WHERE Id IN :validIds]);
      Map<Id,Decimal> maintenanceCycles = new Map<ID,Decimal>();
      AggregateResult[] results = [SELECT Maintenance_Request__c,
MIN(Equipment__r.Maintenance_Cycle__c)cycle FROM Equipment_Maintenance_Item__c
WHERE Maintenance_Request__c IN :ValidIds GROUP BY Maintenance_Request__c];

    for (AggregateResult ar : results){
      maintenanceCycles.put((Id) ar.get('Maintenance_Request__c'), (Decimal) ar.get('cycle'));
    }

      for(Case cc : closedCasesM.values()){
        Case nc = new Case (
          ParentId = cc.Id,
        Status = 'New',
          Subject = 'Routine Maintenance',
          Type = 'Routine Maintenance',
          Vehicle__c = cc.Vehicle__c,
          Equipment__c =cc.Equipment__c,
          Origin = 'Web',
          Date_Reported__c = Date.Today()

        );

        If (maintenanceCycles.containskey(cc.Id)){
          nc.Date_Due__c = Date.today().addDays((Integer) maintenanceCycles.get(cc.Id));
        } else {
          nc.Date_Due__c = Date.today().addDays((Integer)
cc.Equipment__r.maintenance_Cycle__c);
        }

        newCases.add(nc);
      }
     insert newCases;
```

```
        List<Equipment_Maintenance_Item__c> clonedWPs = new
List<Equipment_Maintenance_Item__c>();
        for (Case nc : newCases){
            for (Equipment_Maintenance_Item__c wp :
closedCasesM.get(nc.ParentId).Equipment_Maintenance_Items__r){
                Equipment_Maintenance_Item__c wpClone = wp.clone();
                wpClone.Maintenance_Request__c = nc.Id;
                ClonedWPs.add(wpClone);

            }
        }
        insert ClonedWPs;
    }
  }
}
```

- Create an apex trigger as **MaintetanceRequest.**

MaintetanceRequest.apxt

```
trigger MaintenanceRequest on Case (before update, after update) {
  if(Trigger.isUpdate && Trigger.isAfter){
    MaintenanceRequestHelper.updateWorkOrders(Trigger.New, Trigger.OldMap);
  }
}
```

- After saving the code go back the How We Roll Maintenance ,
- click on Maintenance Requests
  -> click on case
  -> click Details
  -> change the type Repair to Routine Maintenance
  -> select Origin = Phone
  -> Vehicle = select Teardrop Camper then save it.
- Feed
  -> Close Case = save it..

Challenge2:Synchronize Salesforce data with an external system

WarehouseCalloutService.apxc :-

```
public with sharing class WarehouseCalloutService implements Queueable {
   private static final String WAREHOUSE_URL = 'https://th-superbadge-
apex.herokuapp.com/equipment';
   @future(callout=true)
   public static void runWarehouseEquipmentSync(){
      Http http = new Http();
      HttpRequest request = new HttpRequest();

      request.setEndpoint(WAREHOUSE_URL);
      request.setMethod('GET');
      HttpResponse response = http.send(request);

      List<Product2> warehouseEq = new List<Product2>();

      if (response.getStatusCode() == 200){
         List<Object> jsonResponse =
(List<Object>)JSON.deserializeUntyped(response.getBody());
         for (Object eq : jsonResponse){
            Map<String,Object> mapJson = (Map<String,Object>)eq;
            Product2 myEq = new Product2();
            myEq.Replacement_Part__c = (Boolean) mapJson.get('replacement');
            myEq.Name = (String) mapJson.get('name');
            myEq.Maintenance_Cycle__c = (Integer) mapJson.get('maintenanceperiod');
            myEq.Lifespan_Months__c = (Integer) mapJson.get('lifespan');
            myEq.Cost__c = (Integer) mapJson.get('cost');
            myEq.Warehouse_SKU__c = (String) mapJson.get('sku');
            myEq.Current_Inventory__c = (Double) mapJson.get('quantity');
            myEq.ProductCode = (String) mapJson.get('_id');
            warehouseEq.add(myEq);
         }

         if (warehouseEq.size() > 0){
            upsert warehouseEq;
            System.debug('Your equipment was synced with the warehouse one');
         }
```

```
        }
    }

    public static void execute (QueueableContext context){
        runWarehouseEquipmentSync();
    }

}
```

- After saving the code open execute anonymous window (CTRl+E) and run this method , System.enqueueJob(new WarehouseCalloutService());

CHALLENGE 3-Schedule synchronization

WarehouseSyncShedule.apxc :-

```
global with sharing class WarehouseSyncSchedule implements Schedulable{
   global void execute(SchedulableContext ctx){
      System.enqueueJob(new WarehouseCalloutService());
   }
}
```

WarehouseSyncScheduleTest.apxc:-

```
@isTest
 public class WarehouseSyncScheduleTest {
          @isTest static void WarehousescheduleTest(){
           String scheduleTime = '00 00 01 * * ?'; Test.startTest();
           Test.setMoc k(HttpCalloutMock.class,
          new WarehouseCalloutServiceMock());
           String jobID=System.schedule('Warehouse Time To Schedule to Test',
          scheduleTime,  new WarehouseSyncSchedule());
           Test.stopTest();
          //Contains schedule information for a scheduled job. CronTrigger is similar to a
          cron   job on UNIX systems.
           // This object is available in API version 17.0 and later.
           CronTrigger a=[SELECT Id FROM CronTrigger where NextFireTime > today];
          System.assertEquals(jobID, a.Id,'Schedule ');
           }
 }
```

CHALLENGE 4-Test automation logic

MaintenanceRequestHelperTest.apxc :-

```
@istest
public with sharing class MaintenanceRequestHelperTest {

   private static final string STATUS_NEW = 'New';
   private static final string WORKING = 'Working';
   private static final string CLOSED = 'Closed';
   private static final string REPAIR = 'Repair';
   private static final string REQUEST_ORIGIN = 'Web';
   private static final string REQUEST_TYPE = 'Routine Maintenance';
   private static final string REQUEST_SUBJECT = 'Testing subject';

   PRIVATE STATIC Vehicle__c createVehicle(){
      Vehicle__c Vehicle = new Vehicle__C(name = 'SuperTruck');
      return Vehicle;
   }

   PRIVATE STATIC Product2 createEq(){
      product2 equipment = new product2(name = 'SuperEquipment',
                              lifespan_months__C = 10,
                              maintenance_cycle__C = 10,
                              replacement_part__c = true);
      return equipment;
   }

   PRIVATE STATIC Case createMaintenanceRequest(id vehicleId, id equipmentId){
      case cs = new case(Type=REPAIR,
                  Status=STATUS_NEW,
                  Origin=REQUEST_ORIGIN,
                  Subject=REQUEST_SUBJECT,
                  Equipment__c=equipmentId,
                  Vehicle__c=vehicleId);
      return cs;
   }

   PRIVATE STATIC Equipment_Maintenance_Item__c createWorkPart(id equipmentId,id
requestId){
Equipment_Maintenance_Item__c wp = new
Equipment_Maintenance_Item__c(Equipment__c = equipmentId,
```

```
                                                Maintenance_Request__c = requestId);
        return wp;
    }


    @istest
    private static void testMaintenanceRequestPositive(){
        Vehicle__c vehicle = createVehicle();
        insert vehicle;
        id vehicleId = vehicle.Id;

        Product2 equipment = createEq();
        insert equipment;
        id equipmentId = equipment.Id;

        case somethingToUpdate = createMaintenanceRequest(vehicleId,equipmentId);
        insert somethingToUpdate;

        Equipment_Maintenance_Item__c workP =
createWorkPart(equipmentId,somethingToUpdate.id);
        insert workP;

        test.startTest();
        somethingToUpdate.status = CLOSED;
        update somethingToUpdate;
        test.stopTest();

        Case newReq = [Select id, subject, type, Equipment__c, Date_Reported__c, Vehicle__c,
Date_Due__c
                from case
                where status =:STATUS_NEW];

        Equipment_Maintenance_Item__c workPart = [select id
                                    from Equipment_Maintenance_Item__c
                                    where Maintenance_Request__c =:newReq.Id];

        system.assert(workPart != null);
        system.assert(newReq.Subject != null);
```

```
    system.assertEquals(newReq.Type, REQUEST_TYPE);
    SYSTEM.assertEquals(newReq.Equipment__c, equipmentId);
    SYSTEM.assertEquals(newReq.Vehicle__c, vehicleId);
    SYSTEM.assertEquals(newReq.Date_Reported__c, system.today());
  }

  @istest
  private static void testMaintenanceRequestNegative(){
    Vehicle__C vehicle = createVehicle();
    insert vehicle;
    id vehicleId = vehicle.Id;

    product2 equipment = createEq();
    insert equipment;
    id equipmentId = equipment.Id;

    case emptyReq = createMaintenanceRequest(vehicleId,equipmentId);
    insert emptyReq;

    Equipment_Maintenance_Item__c workP = createWorkPart(equipmentId, emptyReq.Id);
    insert workP;

    test.startTest();
    emptyReq.Status = WORKING;
    update emptyReq;
    test.stopTest();

    list<case> allRequest = [select id
                             from case];

    Equipment_Maintenance_Item__c workPart = [select id
                                              from Equipment_Maintenance_Item__c
                                              where Maintenance_Request__c = :emptyReq.Id];

    system.assert(workPart != null);
    system.assert(allRequest.size() == 1);
  }
   @istest
```

```
   private static void testMaintenanceRequestBulk(){
      list<Vehicle__C> vehicleList = new list<Vehicle__C>();
      list<Product2> equipmentList = new list<Product2>();
      list<Equipment_Maintenance_Item__c> workPartList = new
list<Equipment_Maintenance_Item__c>();
      list<case> requestList = new list<case>();
      list<id> oldRequestIds = new list<id>();

      for(integer i = 0; i < 300; i++){
        vehicleList.add(createVehicle());
         equipmentList.add(createEq());
      }
      insert vehicleList;
      insert equipmentList;

      for(integer i = 0; i < 300; i++){
         requestList.add(createMaintenanceRequest(vehicleList.get(i).id, equipmentList.get(i).id));
      }
      insert requestList;

      for(integer i = 0; i < 300; i++){
         workPartList.add(createWorkPart(equipmentList.get(i).id, requestList.get(i).id));
      }
      insert workPartList;

      test.startTest();
      for(case req : requestList){
         req.Status = CLOSED;
         oldRequestIds.add(req.Id);
      }
      update requestList;
      test.stopTest();

      list<case> allRequests = [select id
                        from case where status =: STATUS_NEW];
     list<Equipment_Maintenance_Item__c> workParts = [select id
                                        from Equipment_Maintenance_Item__c
                                        where Maintenance_Request__c in: oldRequestIds];
```

```
        system.assert(allRequests.size() == 300);
    }
}
```

MaintenanceRequestHelper.apxc :-

```
public with sharing class MaintenanceRequestHelper {
    public static void updateworkOrders(List<Case> updWorkOrders, Map<Id,Case>
nonUpdCaseMap) {
        Set<Id> validIds = new Set<Id>();

        For (Case c : updWorkOrders){
            if (nonUpdCaseMap.get(c.Id).Status != 'Closed' && c.Status == 'Closed'){
                if (c.Type == 'Repair' || c.Type == 'Routine Maintenance'){
                    validIds.add(c.Id);

                }
            }
        }

        if (!validIds.isEmpty()){
            List<Case> newCases = new List<Case>();
            Map<Id,Case> closedCasesM = new Map<Id,Case>([SELECT Id, Vehicle__c,
Equipment__c, Equipment__r.Maintenance_Cycle__c,(SELECT Id,Equipment__c,Quantity__c
FROM Equipment_Maintenance_Items__r)
                                                FROM Case WHERE Id IN :validIds]);
            Map<Id,Decimal> maintenanceCycles = new Map<ID,Decimal>();
            AggregateResult[] results = [SELECT Maintenance_Request__c,
MIN(Equipment__r.Maintenance_Cycle__c)cycle FROM Equipment_Maintenance_Item__c
WHERE Maintenance_Request__c IN :ValidIds GROUP BY Maintenance_Request__c];

        for (AggregateResult ar : results){
            maintenanceCycles.put((Id) ar.get('Maintenance_Request__c'), (Decimal) ar.get('cycle'));
```

```
    }

        for(Case cc : closedCasesM.values()){
            Case nc = new Case (
                ParentId = cc.Id,
            Status = 'New',
                Subject = 'Routine Maintenance',
                Type = 'Routine Maintenance',
                Vehicle__c = cc.Vehicle__c,
                Equipment__c =cc.Equipment__c,
                Origin = 'Web',
                Date_Reported__c = Date.Today()

            );

            If (maintenanceCycles.containskey(cc.Id)){
                nc.Date_Due__c = Date.today().addDays((Integer) maintenanceCycles.get(cc.Id));
            }

            newCases.add(nc);
        }

        insert newCases;

        List<Equipment_Maintenance_Item__c> clonedWPs = new
List<Equipment_Maintenance_Item__c>();
        for (Case nc : newCases){
            for (Equipment_Maintenance_Item__c wp :
closedCasesM.get(nc.ParentId).Equipment_Maintenance_Items__r){
                Equipment_Maintenance_Item__c wpClone = wp.clone();
                wpClone.Maintenance_Request__c = nc.Id;
                ClonedWPs.add(wpClone);

            }
        }
        insert ClonedWPs;
    }
  }
```

```
}
```

MaintenanceRequest.apxt :-

```
trigger MaintenanceRequest on Case (before update, after update) {
    if(Trigger.isUpdate && Trigger.isAfter){
        MaintenanceRequestHelper.updateWorkOrders(Trigger.New, Trigger.OldMap);
    }
}
```

CHALLENGE 5-Test callout logic

WarehouseCalloutService.apxc :-

```
public with sharing class WarehouseCalloutService {
```

```
    private static final String WAREHOUSE_URL = 'https://th-superbadge-
apex.herokuapp.com/equipment';

    //@future(callout=true)
    public static void runWarehouseEquipmentSync(){

        Http http = new Http();
        HttpRequest request = new HttpRequest();

        request.setEndpoint(WAREHOUSE_URL);
        request.setMethod('GET');
        HttpResponse response = http.send(request);


        List<Product2> warehouseEq = new List<Product2>();

        if (response.getStatusCode() == 200){
            List<Object> jsonResponse =
(List<Object>)JSON.deserializeUntyped(response.getBody());
            System.debug(response.getBody());

            for (Object eq : jsonResponse){
                Map<String,Object> mapJson = (Map<String,Object>)eq;
                Product2 myEq = new Product2();
                myEq.Replacement_Part__c = (Boolean) mapJson.get('replacement');
                myEq.Name = (String) mapJson.get('name');
                myEq.Maintenance_Cycle__c = (Integer) mapJson.get('maintenanceperiod');
                myEq.Lifespan_Months__c = (Integer) mapJson.get('lifespan');
                myEq.Cost__c = (Decimal) mapJson.get('lifespan');
                myEq.Warehouse_SKU__c = (String) mapJson.get('sku');
                myEq.Current_Inventory__c = (Double) mapJson.get('quantity');
                warehouseEq.add(myEq);
            }

            if (warehouseEq.size() > 0){
                upsert warehouseEq;
                System.debug('Your equipment was synced with the warehouse one');
                System.debug(warehouseEq);
```

```
        }

      }
   }
}
```

WarehouseCalloutServiceTest.apxc :-

```
@isTest
private class WarehouseCalloutServiceTest {
   @isTest
   static void testWareHouseCallout(){
      Test.startTest();
      // implement mock callout test here
      Test.setMock(HTTPCalloutMock.class, new WarehouseCalloutServiceMock());
      WarehouseCalloutService.runWarehouseEquipmentSync();
      Test.stopTest();
      System.assertEquals(1, [SELECT count() FROM Product2]);
   }
}
```

WarehouseCalloutServiceMock.apxc :-

```
@isTest
global class WarehouseCalloutServiceMock implements HttpCalloutMock {
   // implement http mock callout
   global static HttpResponse respond(HttpRequest request){

      System.assertEquals('https://th-superbadge-apex.herokuapp.com/equipment',
request.getEndpoint());
      System.assertEquals('GET', request.getMethod());

      // Create a fake response
      HttpResponse response = new HttpResponse();
      response.setHeader('Content-Type', 'application/json');
```

```
response.setBody('[{"_id":"55d66226726b611100aaf741","replacement":false,"quantity":5,"name":
"Generator 1000 kW","maintenance period":365,"lifespan":120,"cost":5000,"sku":"100003"}]');
        response.setStatusCode(200);
        return response;
    }
}
```

CHALLENGE 6-Test scheduling logic

WarehouseSyncSchedule.apxc :-

```
global class WarehouseSyncSchedule implements Schedulable {
    global void execute(SchedulableContext ctx) {

        WarehouseCalloutService.runWarehouseEquipmentSync();
    }
}
```

WarehouseSyncScheduleTest.apxc :-

```
@isTest
public class WarehouseSyncScheduleTest {

    @isTest static void WarehousescheduleTest(){
        String scheduleTime = '00 00 01 * * ?';
        Test.startTest();
        Test.setMock(HttpCalloutMock.class, new WarehouseCalloutServiceMock());
        String jobID=System.schedule('Warehouse Time To Schedule to Test', scheduleTime, new
WarehouseSyncSchedule());
        Test.stopTest();
        //Contains schedule information for a scheduled job. CronTrigger is similar to a cron job on
UNIX systems.
        // This object is available in API version 17.0 and later.
        CronTrigger a=[SELECT Id FROM CronTrigger where NextFireTime > today];
        System.assertEquals(jobID, a.Id,'Schedule ');
        }
}
```

Process Automation Specialist

1.Create a Trailhead Playground and install a package (package **ID 04t46000001Zch4**).
2.Standard objects used are Account,Contact,Opportunity.

3.Custom objects used are RobotSetup with record type with Master-DetailRelationship to an opportunity.
Fields created are:

- Name
- Date
- Notes
- Day of the week

Challenge 1 Automate Leads

1.First create Validation Rule with the formula using the condition given in the transcript and then create the leads.
2.From quick find box search for assignment rule and in rule entry enter Field as Lead Source and operator as not equals to and value as web.
3. with this this challenge completes.

Challenge 2 Automate Accounts

1.Create the given fields for Account object in the description i.e.,

- Number_of_deals__c,Number_of_won_deals__c,
- last_won_deal_Date__c,Amount_of_won_deals__c,
- Deal_win_percent__c, Call_for_service__c

2.And then create two Validation Rules for this according to given description and give Error messages to them.

Challenge3 Create Robot Setup Object

1.First create Robot Setup with master-Detail relationship to opportunity and create the fields Date,
Notes,
Day of the week with certain type.

Challenge 4 Create Sales Process and Validate Opportunities

1.Add a picklist value to the Stage field in Opportunity called Awaiting Approval

2.And add a validation rule with the certain formula having **Amount>100000**
3.This concludes challenge.

Challenge 5 Automate the opportunities

1.Create three email templates called Finance:Account Creation SALES:Opportunity Needs Approval Sales:Opportunity Approval Status these email alerts are used to create alerts when creating a process.
2.Criteria must be Opportunity stage equals Negotiation/review and Opportunity amount Greater Than 100000
3.Make sure that manager as Nushi Davoud in manage Users.
4.Create Process in the process builder for opportunity.
5.Create the nodes for all the criteria mentioned in the description and also the email alerts.
6.Create email alert for Finance:Account creation and a record with subject as 'Send marketing materials that was assigned to owner.
7.and a node for Approvals and also a record for Robot setup with certain Formula.

Challenge 6 Create flow for opportunities Create flow for opportunities and name it as Product Quick Search

1.Add Screen Component named product Quick Search and add radio components
- CloudyBot,
- Assembly System,
- Rainbow Bot.

2.Add an element to it name it as get Record and label it as Search Product and object as Product.
3.And add Display Screen at last and link all three together in certain order to build a successful flow.

Challenge 7 Automate setups

1.Go to Day of the week field which was created earlier in robot object and add the formula to it i.e.,
Case(WeekDay(Date__c),
1,"Sunday",
2,"Monday",
3,"Tuesday",
4,"Wednesday",
5,"Thursday",
6,"Friday",
7,"Saturday",
Text(WeekDay(Date__c))) then click save.
2. Goto process builder,clone the process you made to change the formula given there to meet the business requirements as mentioned.